**Preparation for MSc(CS+) students**

1. **This list includes subject matter that we will assume you already know.**

* Some basic Java programming skills.
  + A useful introduction to Java is *Big Java* (Horstmann, 2009).
* Some basic Python programming skills.
  + A useful introduction to Python is *How to Think Like a Computer Scientist: Learning with Python* (Downey. Elkner & Myers, 2002)
* The basics of relational databases.
  + <https://youtu.be/vyVGm_2iFwU?list=PLSE8ODhjZXja3hgmuwhf89qboV1kOxMx7&t=1076> (lecture 01)
  + <https://youtu.be/80atcA6gBU8?list=PLSE8ODhjZXja3hgmuwhf89qboV1kOxMx7&t=673>
* The fundamentals of operating systems.
  + <https://www.youtube.com/playlist?list=PLggtecHMfYHA7j2rF7nZFgnepu_uPuYws> (most of the 1st lecture can be omitted)
* Basic probability.
  + *Artificial intelligence: a modern approach* (Russell & Norvig, 2010) Chapter 13, or
  + <https://github.com/norvig/pytudes/blob/master/ipynb/Probability.ipynb> if you prefer a Python-based introduction.
* Basic linear algebra including vectors, matrices and linear transformations
  + <https://www.youtube.com/playlist?list=PLZHQObOWTQDPD3MizzM2xVFitgF8hE_ab> (video 1-6).

1. **This list includes subject matter we will cover the courses; if you have time, you might want to look at these materials in advance:**

* Programming and Systems Development fundamentals:
  + SOCS web address here
* Introduction to Data Science and Systems:
  + <https://www.youtube.com/playlist?list=PLSE8ODhjZXja3hgmuwhf89qboV1kOxMx7> (lecture 02 onwards)
* Research and Professional Skills:
  + *The ACM Code of Ethics and Professional Conduct* (<https://www.acm.org/code-of-ethics>).
* Enterprise Cyber Security (not Data Science students):
  + Cyber-Risk Management (Refsdal, Solhaug & Stølen, 2015)
  + Cyber Security Policy Guidebook   (Bayuk, Healey, Rohmeyer, Sachs, Schmidt & Weiss, 2012)
* Artificial Intelligence (Data Science students only):
  + Computing Machinery and Intelligence (A. M. Turing, 1950) <https://phil415.pbworks.com/f/TuringComputing.pdf>
  + Artificial Intelligence — The Revolution Hasn’t Happened Yet (Michael I Jordan, 2018), <https://rise.cs.berkeley.edu/blog/michael-i-jordan-artificial-intelligence%E2%80%8A-%E2%80%8Athe-revolution-hasnt-happened-yet/>
  + Artificial intelligence: a modern approach (Russell & Norvig, 2010)
* Machine Learning for Data Scientists (Data Science students only):
  + A first course in Machine Learning (Rogers & Girolami, 2012)